



Ford Motor Company

Crown Victoria Police Interceptor
Police Officer Safety Action Plan



July 3, 2002

Ford Motor Company Crown Victoria Interceptor Police Officer Safety Action Plan

***Ford is committed to making a
safe car safer. This is Ford's
Number 1 priority.***

Making a Safe Car Safer

The Crown Victoria Police Interceptor (CVPI) has become the dominant police vehicle in the United States because of its features and its overall performance and safety record.

The CVPI is a safe and effective vehicle for police work. Perhaps the most remarkable fact is that – despite its use in highly risky police work – statistics show it has a comparable accident and fire record to other similar, mass-produced vehicles, including vehicles with the same or alternative fuel tank locations and those which are used primarily by civilians.

Ford is also the industry leader in vehicle testing, crash testing 100% of its models at 35 and 50 mph, in a program that exceeds federal government regulations. However, even given our stringent crash test requirements and the excellent field performance of the CVPI in the high-risk environment of police work, Ford is always looking for opportunities to improve the performance of the CVPI in even the most unusual circumstances.

A Holistic Approach to Police Safety

Following four high-speed, rear-collision accidents in Arizona that resulted in vehicle fires, Ford began working with the Arizona Attorney General, as a representative of the national law enforcement community, to develop its CVPI Police Officer Safety Action Plan.

This Plan recognizes that police officer safety depends on a range of factors, including — but not limited to — police vehicle design. The Plan therefore represents a holistic approach, addressing the entire spectrum of work practices and equipment that protect officers from this rare type of high-speed accident.

The CVPI Police Officer Safety Action Plan has three major components:

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| 1. Formation of Blue Ribbon Panel |
| 2. Formation of Technical Task Force |
| 3. Enhanced Communication |

CVPI Police Officer Safety Action Plan



1. The Blue Ribbon Panel

Ford has learned that improving officer safety takes actions by a variety of groups to be successful. Reducing the potential for high-speed rear collisions in the first place is a vital part of any effort to protect police officers.

The Blue Ribbon Panel will utilize Ford's global reach to search the world for the best ideas and practices for police officer protection. The Panel will advise law enforcement agencies and Ford on the full range of issues confronting officers who are on the road in the line of duty.

The Blue Ribbon Panel will:

- **Identify best practices to help avoid accidents and improve officer safety**
- **Focus on such issues as:**
 - **Vehicle visibility**
 - **Use of occupied police cars as barriers**
 - **Other alternatives for barriers**
 - **Police procedures during traffic stops**

The Panel will be comprised of:

- **Nine members total**
- **Four chosen by Arizona Attorney General**
- **Four chosen by Ford**
- **The ninth member will be the chair of the newly formed Technical Task Force**



2. Technical Task Force

Ford accepts the challenge of further reducing the risk of post-collision fires while continuing to fulfill police requirements, such as speed, maneuverability, comfort, rear-seat space, trunk space, and ground clearance. Although many suggestions have been made for improvements to the CVPI, there is no “quick fix” that is proven to upgrade officer safety. It is vital to avoid making changes that inadvertently put officers at greater risk. Therefore, further exploration is needed before taking action to address these unusual accidents.

The Technical Task Force will seek to identify opportunities to make a safe car safer. The Task Force will examine a full range of design features and utilize advanced testing techniques to answer questions that surround rare, high-speed rear collisions that result in fires.

The Technical Task Force will look at crashworthiness issues for the CVPI including:

- Bladders
- Shields
- Fuel tank issues
- Trunks
- Fire suppression
- Trunk packages
- Testing speeds and methods

The Technical Task Force will consist of:

- Ford engineers/experts
- Selected outside technical experts, including representatives of the military and the racing and aviation industries

An initial action by the Technical Task Force, which was formed in early July, will be to conduct crash, emissions, and durability testing of both bladders and shields.

Estimated completion of these initial tests will be within 30-90 days of the Task Force formation.

The Task Force also will explore new technologies to advance the state of the art in materials science and fire prevention.

Ford and the Arizona Attorney General will jointly review results from the Technical Task Force to determine appropriate opportunities to make a safe car safer.



3. Enhanced Communication

Accurate, timely information is vital to any action on the part of law enforcement agencies and Ford to improve officer safety.

Enhanced communications will be developed to streamline and expedite the flow of information from Ford to local law enforcement agencies about the features of the CVPI and best practices regarding officer safety. This two-way flow will also involve information conveyed to Ford about accidents involving CVPIs and police officers.

Ford's enhanced communications will:

- **Improve existing communications channels with local law enforcement agencies**
- **Provide them with access to accident data and research regarding officer and vehicle safety issues**

Ford also will work with law enforcement agencies to gain immediate access to CVPIs following accidents as such information will improve Ford's regular, ongoing monitoring and analysis of real-world performance of CVPIs.

Working Together to Make a Safe Car Safer and Protect Police Officers

These components will work together as a system to form a foundation for action on the part of Ford and law enforcement agencies. The cooperation between Ford and the Arizona Attorney General, as a representative of the national law enforcement community, will ensure that this plan moves forward to improve officer safety.

Ford will act to make a safe car safer based on the findings of the Technical Task Force. Those actions will be communicated to the Arizona Attorney General, law enforcement agencies and the public via new communication channels.

Law enforcement agencies in turn will have access to the findings of the Blue Ribbon Panel for use in their safety practices. They will be able to tap Ford's global reach to provide the safest work environment possible for police officers working in their highly risky settings.

Ford's CVPI Police Safety Action Plan is an entirely new approach to officer protection and safety. It is a part of Ford's continuing commitment to the safety of all its customers, especially those who must put their lives on the line for us every day.

BACKGROUNDER

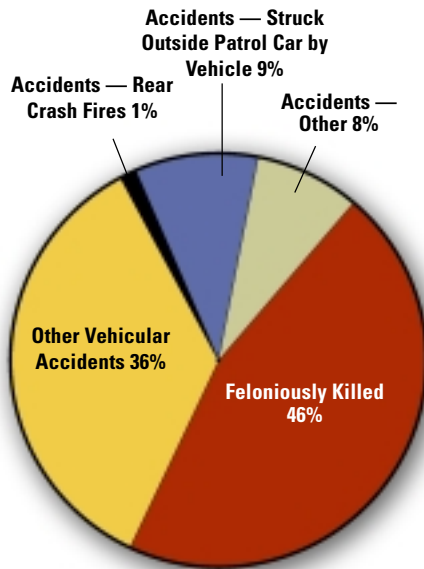


Ford Motor Company

Crown Victoria Police Interceptor
Police Officer Safety Action Plan

1. No design can eliminate all risk – each accident is unique. And among risks officers face, rear-end collisions with fires are rare.
2. The Crown Victoria Police Interceptor is a safe, reliable vehicle for police use.
3. Ford is the industry leader in vehicle testing programs, exceeding federal regulations.
4. Ford is committed to continuous improvement of the CVPI.
5. Ford works with police departments to meet their requirements.
6. There is no “quick fix” to these rare accidents. Suggested improvements require further exploration.
7. Improving police safety is a combined effort.

1. No design can eliminate all risk in high-speed, high-impact rear collisions that result in fires – each accident is unique. And these accidents are very rare among the many risks officers face in their daily jobs.



**Cause of Officer Fatalities
1996-2000**

Source: FBI; Reported CVPI incidents

- Police officers face many risks in their jobs. Among these risks, post-collision fires are very rare and unusual.
- In those rare instances where a post-collision fire occurs, it is due to the unique circumstances of each accident rather than any particular design attribute.
- These accidents involve impacts well beyond the design intent of any vehicle manufactured by any company in the world.
- No vehicle maker could reasonably anticipate or prevent the unique conditions surrounding these accidents, nor has any vehicle ever been designed to reliably withstand these kinds of impacts.
- It's important to realize that for every story of a post-collision fire, there are many more where the CVPI performs way beyond any reasonable expectations in high-impact incidents.

Examples of High-Speed, Rear-End Crown Victoria Accidents Where There Were No Fuel Leaks or Fires



Top: On April 3, 2002, Romulus (Mich.) Police Officer Daniel Czajkowski had stopped a semi/tractor-trailer for speeding. His CVPI was parked partially in the travel lane when it was slammed from behind by another tractor-trailer traveling at about 65 mph. The force of the impact compressed the entire left side of the car into a one-foot space behind the driver. Although the semi/tractor-trailer dumped its entire fuel load, the CVPI's tank remained intact.



Center: Colorado — December 8, 2001

Bottom: North Carolina — October 23, 1999





Top: Oklahoma — November 3, 2001



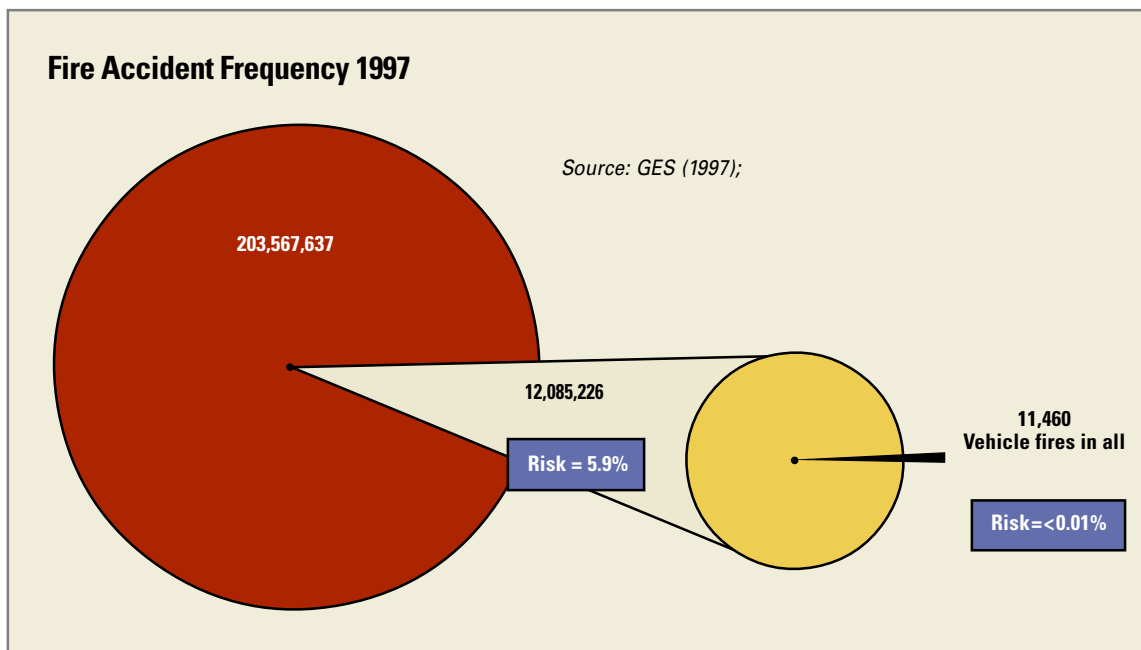
Center: Oklahoma — May 21, 2001



Bottom: Ohio — March 28, 2002

2. The Crown Victoria Police Interceptor has a proven track record as a safe, reliable vehicle for police use.

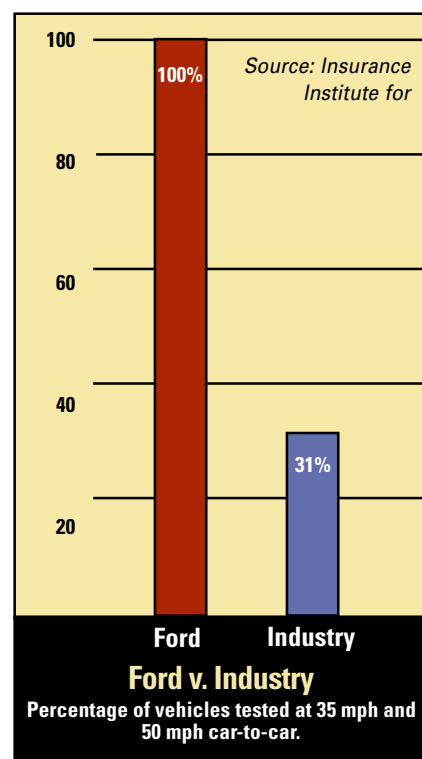
- Perhaps the most remarkable fact about the CVPI safety record is that – despite its use in highly risky police work – statistics show it has a comparable accident and fire record to other similar, mass-produced vehicles, most of which are used exclusively by civilians.
- Post-collision fires are extremely rare in all accidents, generally accounting for less than 0.01% of the 12 million accidents that occur on our nation's roads annually.
- Accident data show that the number of rear-collision fires involving the CVPI is comparable with other makes and models, including those with same or alternative fuel tank locations.



- Some critics claim that the location of the fuel tank in the CVPI makes it more dangerous than other vehicles, but the facts prove otherwise:
 - A direct comparison of the CVPI and the Ford Taurus, which has a different fuel tank placement and also is used in police work, showed comparable fire rates. The CVPI has an incident rate of 1 fire out of 1,000 rear-end collisions, while the Ford Taurus has 1.1 out of 1,000 collisions.
 - There are many vehicles with fuel tanks located toward the middle of the vehicle that don't perform as well as the CVPI.
 - The fuel tank of the CVPI is located 39 inches away from the rear bumper, providing a great deal of space between it and any rear impact. Many vehicles with different tank locations don't offer as much protective space as the CVPI.

3. Ford is the industry leader in vehicle testing, exceeding government regulations.

- Before selling our vehicles to the public, Ford crash tests 100% of its models at both 35 mph and 50 mph to confirm that our fuel systems meet the most rigorous standards in the industry. Less than a third of the industry models receive comparable tests.
- In a crash test to NHTSA's proposed next-generation fuel system integrity standards, a 1996 CVPI met those future model requirements. Those requirements won't be in effect until the middle of this decade, putting the 1996 CVPI 10 years ahead of its time.
 - The new government standards are the result of an eight-year study from 1992-2000 that included public comment and data from real world accidents. NHTSA proposed a change in the rear impact test standard, moving from a 30 mph to a 50 mph crash test.
 - The new standard is very similar to Ford's current testing, involving 50 mph crash tests. NHTSA said its study "concluded that striking a stationary vehicle at 50-55 mph with a moving deformable barrier (MDB) at a 70 percent overlap (width of vehicle engagement) would provide a reasonable crash simulation of real world rear impact fatal burn cases."
- The CVPI has earned NHTSA's 5-Star crash rating for both passenger and driver safety in a frontal collision, the highest vehicle crashworthiness rating possible.
 - NHTSA does not provide Star ratings for rear-end collisions because they account for only about 5.8% of all fatal accidents, compared with 72% for front collisions.



Source: Insurance Institute for Highway Safety (Dec. 1992)

2001 Heavy Passenger Cars

Source: <http://www.nhtsa.dot.gov/ncap>. Posted 02/07/2002

Make & Model	Frontal Star Rating	Side Star Rating		
	Driver	Passenger	Front Seat	Rear Seat
2001 Acura RL 4-DR. w/SAB	★★★★★	★★★★★	Not Tested	Not Tested
2001 Audi A8 4-DR. w/SAB	★★★★★	★★★★★	Not Tested	Not Tested
2001 Buick LeSabre 4-DR. w/SAB	★★★★★	★★★★★	★★★★★	★★★★★
2001 Buick Park Avenue 4-DR. w/SAB	★★★★★	★★★★★	★★★★★	★★★★★
2001 Cadillac Deville 4-DR. w/SAB	★★★★★	★★★★★	★★★★★	★★★★★
2001 Chrysler 300M 4-DR. 4-DR.	★★★ High Likelihood of Thigh Injury	★★★★★	Not Tested	Not Tested
2001 Chrysler LHS 4-DR.	★★★ High Likelihood of Thigh Injury	★★★★★	★★★★★	★★★★★
2001 Ford Crown Victoria 4-DR.	★★★★★	★★★★★	★★★★★	★★★★★
2001 Lincoln LS 4-DR. w/SAB	★★★★★	★★★★★	★★★★★	★★★★★
2001 Lincoln Town Car 4-DR. w/SAB	★★★★★	★★★★★	★★★★★	★★★★★
2001 Mercury Grand Marquis 4-DR.	★★★★★	★★★★★	★★★★★	★★★★★
2001 Oldsmobile Aurora 4-DR. w/SAB	★★★★★	★★★★★	★★★★★	★★★★★
2001 Pontiac Bonneville 4-DR. w/SAB	★★★★★	★★★★★	★★★★★	★★★★★
2001 Volvo S80 4-DR. w/SAB	★★★★★	★★★★★	★★★★★	★★★★★

4. Ford continuously monitors the real-world performance of the CVPI in the field, and uses these analyses to constantly make improvements to the car.

Ford has made numerous changes that have improved the crashworthiness of the Crown Victoria since the 1996 model year.

1998	Improved rear frame structure
	Location of parking brake cable from axle
	Increasing the thickness of the fuel tank steel rear panel
	Second generation air bag system
2001	Personal safety system with dual threshold and dual stage air bags with seat position and belt usage sensors and improved crash sensors
	Improved front seat belt system with pre-tensioners and load management
	Removing the tab on the bottom of the sway bar bracket
2003	A police interceptor trunk pack option (currently in production)
	New rear suspension moved the shock bracket outboard of the fuel tank
	Side air bags and improved side impact structure
	Standard ABS braking system with enhanced friction material
	Enhanced, performance-oriented front suspension system with redesigned springs and shocks to improve handling control
	New rack and pinion steering
	New hydroformed straight front rail design
	Revised headrest
	Center frame rails and stiffer body – for improved offset crash protection
	Front rail modification – for NCAP improvement
	Floor pan bracing – for improved side crash stiffening
	Revised #3 crossmember – for improved side crash stiffening
	Improved door beam attachments – for improved side crash performance
	Improved crush can – for improved front crash performance
	Upgraded roof rail

- Even given our stringent crash test requirements and the excellent field performance of the CVPI in the high-risk environment of police work, Ford is always looking to improve the performance of the CVPI in even the most unusual circumstances.
- Based upon its analyses of real world performance, Ford continuously makes changes to improve the design and crashworthiness of the CVPI. (See Timeline)

5. The Crown Victoria Police Interceptor is the preferred police vehicle because Ford works with police departments and meets their requirements.

The CVPI has the design features police want:

- **Rear-wheel drive**
- **V-8 engine**
- **Large back seat**
- **Spacious trunk**
- **Heavy duty frame suspension**
- **High-speed capability**

- The CVPI has become the dominant police vehicle because of its features and its overall performance and safety record.
- When Ford designs the CVPI, we work with the police organizations.
 - Law enforcement organizations across North America judge our products by their performance against stringent test protocols.
 - The CVPI is tested independently by the Michigan State Police and the Los Angeles County Sheriff's Department and their evaluation of our performance is critical to the success of our product.
- Police agencies are in the best position to know how their cars are being used – and to provide specifications and performance requirements.
- Prior to September 1999, no police agency questioned the design or performance of the CVPI.
- No police agency's bid specifications ever required rear-end crash testing at 75 mph, "zero leakage," or elimination of risk of all post-collision fires – and no manufacturer could deliver a vehicle to meet such specifications, while fulfilling police requirements, such as speed, maneuverability, comfort, rear-seat space, trunk space, and ground clearance.

6. There is no “quick fix” to these rare accidents. Suggested improvements require further exploration.

Under the CVPI Police Officer Safety Action Plan, the Technical Task Force will explore a number of issues surrounding CVPI design and testing. The following are some of the areas in which suggestions have been made. The background information is based on current data available to Ford but also indicates areas in which further research could be helpful.

75 mph crash test

- Following an eight-year process in which it considered testing at a variety of speeds, *NHTSA did not adopt a proposal to test at speeds higher than 50 mph.*
 - Too many variables enter into the picture when approaching speeds of 75 mph. There are significant and unpredictable variations in the impact. For example, a minor difference in the inflation or deflation of the tires may lead to a completely different outcome in these high-speed tests.
 - Ford conducted two tests at 70+ mph that were designed to re-create one of the Arizona accidents, and the parking brake bolt that punctured the tank in the accident did not do so in either test.

Fuel tank shields

- While shields sound like a simple and inexpensive choice, their use involves complex engineering to avoid potential unwanted consequences that detract from durability and safety.
- Ford has extensive experience using gas tank shields and uses them when the safety advantages outweigh the potential risks associated with them.
- Ford crash testing showed that no shield was necessary for the CVPI.
 - In the two tests done to re-create the Arizona accident, the one using a fuel tank shield produced a leak greater than a crash test with no shield.

Bladders

- Bladders are untested and unproven on mass-produced vehicles such as the CVPI and do not represent state-of-the-art safety technology.
- In race cars they are used in completely different conditions, under constant maintenance. Their durability in day-to-day police work remains untested.
- In 2001, an after-market supplier began offering a retrofit bladder kit but that kit has never been crash tested. The supplier has referred to the kit as a “prototype.”
- When Ford received the bladder kit, it was promptly recalled because of leaks.
- EPA emissions requirements specify that a fuel system last for 15 years and 150,000 miles. No bladder technology even approaches these national requirements.

“ The study concluded that striking a stationary vehicle at 50-55 mph with a moving deformable barrier (MDB) at a 70 percent overlap (width of vehicle engagement) would provide a reasonable crash simulation of real world rear impact fatal burn cases. ”

Source: Docket No. NHTSA-00-8248

"We believe that this test demonstrates that structural and component design is a more critical factor than fuel tank location in maintaining fuel system integrity."

Source: Docket No. NHTSA-00-8248

Moving Fuel Tank

- There is no reason to move the fuel tank because it has proven to be safe in its location in the CVPI.
- NHTSA rejected a proposal to require manufacturers to place a vehicle's fuel tank forward of the rear axle because "such a requirement is unnecessary and would be design restrictive." Based on testing it concluded, "...that structural and component design is a more critical factor than fuel tank location in maintaining fuel system integrity."
- The proof of safety is in the CVPI's record – it is as safe or safer than most of its peers despite its exposure to high-speed rear impacts in police use.
- Placing the fuel tank behind the axle enables Ford to meet police specifications such as rear-wheel drive, large fuel tank, appropriate ground clearance, large rear seats and trunk space.
- The fuel tank is farther from the CVPI's bumper than it is in many smaller cars, thus giving it a higher margin of safety in most accidents.
- NHTSA tested 13 models to its new standard, seven of those models failed, including six that had mid-ship fuel tanks. The CVPI passes that test. In a crash test, a 1996 CVPI met that standard.

Technical Service Bulletin

- Ford's decision to issue a Technical Service Bulletin (TSB 01-21-14 dated October 22, 2001) – and not a recall – was based on our investigation into the Arizona accidents that found that the unique dynamics of high-speed accidents can create a fuel tank leak never before seen in any other crash test or accident we have ever inspected. While we do not believe that this indicates a need for a recall, we wanted to communicate to police customers how they could help reduce even this remote risk. We have communicated this TSB to more than 18,000 police fleets across North America.
- Again, no vehicle is fireproof and the existence of extremely rare accidents at high speeds does not indicate a safety-related defect or necessitate a recall.

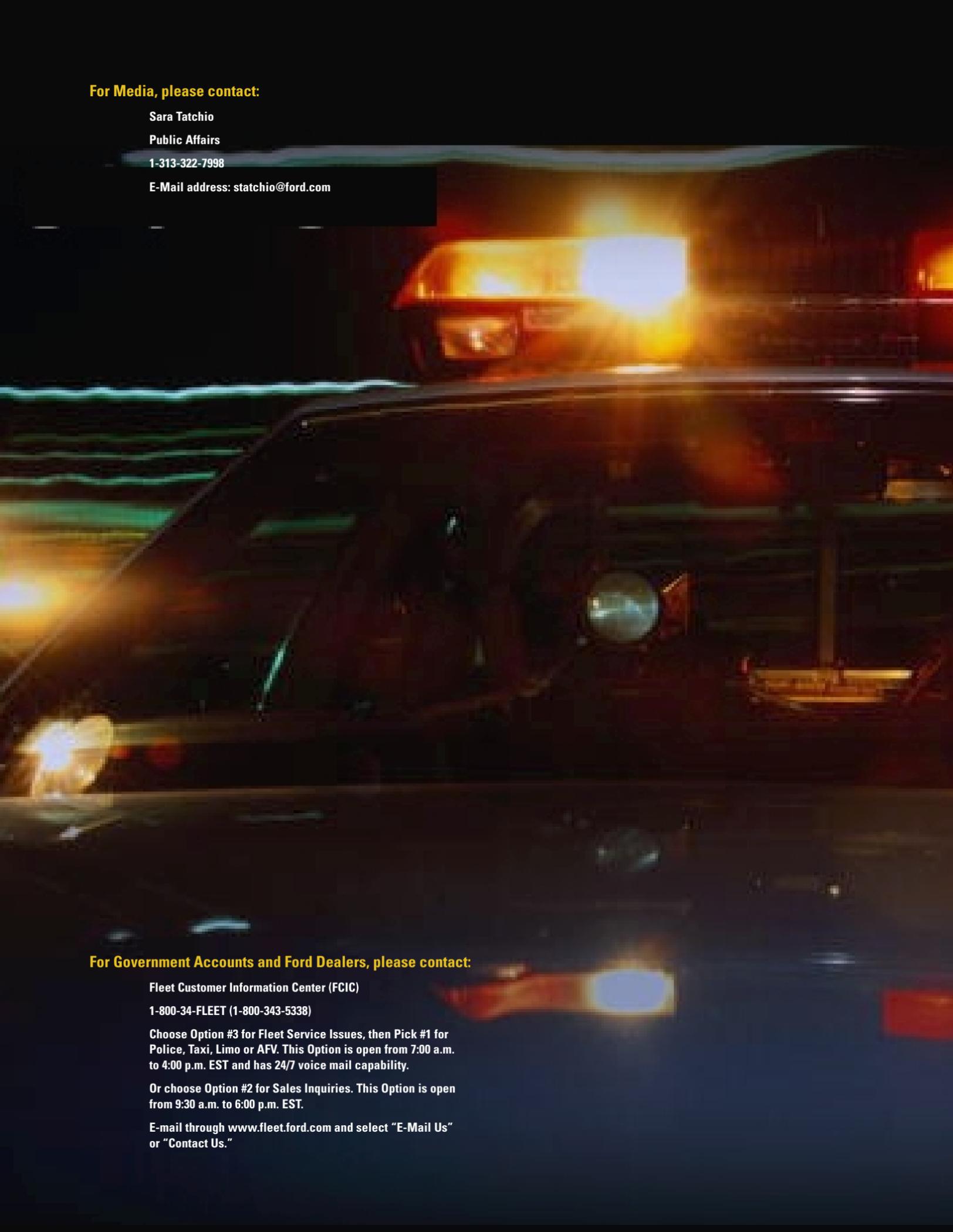
7. Other actions can enhance police officers' safety, reduce accidents.



A truck with “blocker” attached to protect construction vehicles; such blockers, although designed for a single purpose, are certified only for collisions up to 62 mph.

- Ford continuously undertakes efforts to reduce the risk of fuel leaks and improve the safety of its vehicles. But Ford has learned that improving safety takes actions by a variety of groups to be successful. Reducing the potential for these collisions in the first place also is important.
- Under the CVPI Police Officer Safety Action Plan, the Blue Ribbon Panel will tap Ford's global reach to identify best practices for police officer safety. Enhanced communications will convey these practices to law enforcement agencies throughout the country.
- Police officers are more frequently exposed to the possibility of being rear-ended at high speeds because they often park to the side of highways for traffic stops and accidents, and cars are sometimes inappropriately occupied when used as in-road “blockers” for construction and accidents.
- Experiences in other states indicate there are actions beyond vehicle modifications that can be taken to protect the safety of police officers and the civilians they are assisting.
 - Investigate the effectiveness of different emergency vehicle lights in different atmospheric conditions to determine whether changing the lights on the light bars would enhance visibility and safety.
 - Investigate whether the color of highway markings increase or lessen a driver's depth perception and visibility of vehicles on the shoulder. For instance, contrasting color shoulders, yellow fog lines and rumble stripes, while common in other parts of the country, were not present at Officers Fink's and Cruz's accident scenes.
 - Mandate drivers vacate the lane adjacent to a stopped police car in multi-lane highways.
 - Consider special, heavy-duty “blocker” equipment to protect construction workers. Some states require police to remove their cars from these dangerous “blocking” situations as soon as the emergency is over. Note: “Blocker” trucks are only certified to 62 mph.





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